SECTION 347115 – SITE BOLLARDS

Revise this Section by deleting and inserting text to meet Project-specific requirements.

1. GENERAL
   * + 1. RELATED DOCUMENTS
          1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
       2. SUMMARY
          1. Section Includes:

Bollards.

* + - 1. REFERENCES
         1. ASTM International

ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

ASTM A135 - Standard Specification for Electric-Resistance-Welded Steel Pipe

* + - 1. SUBMITTALS
         1. Submittals in this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: For each type of product.

USE PARAGRAPH BELOW WITH EPD REQUIREMENT WHEN PROJECT ESTIMATE IS $1M OR MORE.

* + - * 1. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel pipe bollards within this specification section, if available. A statement of the contractor’s good faith effort to obtain the EPD shall be provided if not available.

Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

Retain "Samples" Paragraph below for single-stage Samples, with a subordinate list if applicable. Retain "Samples for Initial Selection" and "Samples for Verification" paragraphs for two-stage Samples.

* + - * 1. Samples: For each exposed product and for each color and texture specified.
        2. Samples for Initial Selection: For units with factory-applied finishes.
        3. Samples for Verification: For each type of exposed finish, not less than 6-inch-6-inch-long linear components and 4-inch-4-inch-square sheet components.

Include full-size Samples of [**bench**] [**table**] [**bicycle rack**] [**trash receptacle**] [**ash receptacle**] <**Insert product**>. Approved samples may be incorporated into the Work.

* + - 1. CLOSEOUT SUBMITTALS
         1. Maintenance Data: For site furnishings to include in maintenance manuals.

1. PRODUCTS
   * + 1. BOLLARDS

Retain Eagle Manufacturing Company if yellow pipe sleeve is specified.

* + - * 1. Manufacturers:

Canterbury Designs.

Columbia Cascade Company.

Eagle Manufacturing Company.

Approved equivalent.

* + - * 1. Bollard Construction:

Most manufacturers recommend Schedule 40 pipe, complying with ASTM A53, for heavy-duty applications.

Pipe OD: Not less than [**4-1/2 inches**] <**Insert dimension**>[**, fluted**].

Steel: Schedule 40 pipe.

Style: [**Manufacturer's standard**] [**Chamfered top**] [**Dome top**] [**Ornamental cap**] [**As indicated].**

Overall Height: [**As indicated**] <**Insert dimension**>.

Overall Width: [**As indicated**] <**Insert dimension**>.

Overall Depth: [**As indicated**] <**Insert dimension**>.

Accessories: [**Eye bolts**] Yellow pipe sleeve <**Insert accessory**>.

Installation Method: Cast in concrete.

* + - * 1. Steel Finish: [**Galvanized**] [**Color coated**].

Retain "Color" Subparagraph below unless galvanized coating is final finish.

Color: Black

* + - 1. MATERIALS
         1. Plastic: Color impregnated, color and UV-light stabilized, and mold resistant.

Polyethylene: Fabricated from virgin plastic HDPE resin.

* + - * 1. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard, corrosion-resistant-coated or noncorrodible materials; commercial quality, tamperproof, vandal and theft resistant [**, concealed, recessed, and capped or plugged**].

Retain "Nonshrink, Nonmetallic Grout" or "Erosion-Resistant Anchoring Cement" Paragraph below if site furnishings are set in pipe sleeves or voids in concrete; otherwise, delete both paragraphs.

* + - * 1. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107; recommended in writing by manufacturer, for exterior applications.
        2. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound; resistant to erosion from water exposure without needing protection by a sealer or waterproof coating; recommended in writing by manufacturer, for exterior applications.
      1. FABRICATION
         1. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.
         2. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.
         3. Factory Assembly: Factory assemble components to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.
      2. GENERAL FINISH REQUIREMENTS
         1. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
      3. STEEL AND GALVANIZED-STEEL FINISHES

Revise "Powder-Coat Finish" Paragraph below if less-durable, nonpowder-coat, baked-enamel finish suits Project and product. Most manufacturers listed in the Evaluations finish products with baked, polyester, powder-coat finish. Verify availability with manufacturers.

* + - * 1. Powder-Coat Finish: Manufacturer's standard polyester, powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.
        2. PVC Finish: Manufacturer's standard, UV-light stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on, PVC-plastisol finish, with flame retardant added; complying with coating manufacturer's written instructions for pretreatment, application, and minimum dry film thickness.

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.
          2. Proceed with installation only after unsatisfactory conditions have been corrected.
       2. INSTALLATION
          1. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
          2. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
          3. Install site furnishings level, plumb, true, and positioned at locations indicated on Drawings.

Retain "Post Setting" or "Posts Set into Voids in Concrete" Paragraph below if site furnishings are supported by embedded pipe or tubing posts, or revise to suit Project.

* + - * 1. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
        2. Posts Set into Voids in Concrete: Form or core-drill holes for installing posts in concrete to depth recommended in writing by manufacturer of site furnishings and larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with [**nonshrink, nonmetallic grout**] [**or**] [**anchoring cement**], mixed and placed to comply with anchoring material manufacturer's written instructions, with top smoothed and shaped to shed water.

END OF SECTION 347115